

Inside the Mind of a Psychopath

Neuroscientists are discovering that some of the most cold-blooded killers aren't bad. They suffer from a brain abnormality that sets them adrift in an emotionless world

By Kent A. Kiehl *and* Joshua W. Buckholtz

The word “psychopath” conjures up movie images of brutal, inexplicable violence: Jack Nicholson chasing his family with an ax in *The Shining* or Anthony Hopkins as Hannibal Lecter, his face locked into an armored mask to keep him from biting people to death. But real life offers another set of images, that of killers making nice: Ted Bundy as law student and aide to the governor of Washington State, and John Wayne Gacy as the Junior Chamber of Commerce’s “Man of the Year.” Psychopaths are likable guys when they want to be.

Between the two of us, we have interviewed hundreds of prison inmates to assess their mental health. We are trained in spotting psychopaths, but even so, coming face to face with the real article can be electrifying, if also unsettling. One of the most striking peculiarities of psychopaths is that they lack empathy; they are able to shake off as mere tinsel the most universal social obligations. They lie and manipulate yet feel no compunction or regrets—in fact, they

don’t feel particularly deeply about anything at all.

So much of the way regular people make sense of the world is through emotion. It informs our “gut” decisions, our connections to people and places, our sense of belonging and purpose. It is almost impossible to imagine life without feelings—until you meet a psychopath. But psychopaths often cover up their deficiencies with a ready and engaging charm, so it can take time to realize what you are dealing with.

One of us (Kiehl) used to ask inexperienced graduate students to interview a particularly appealing inmate before acquainting themselves with his criminal history. These budding psychologists would emerge quite certain that such a well-spoken, trustworthy person must have been wrongly imprisoned. Until, that is, they read his file—pimping, drug dealing, fraud, robbery, and on and on—and went back to reinterview him, at which point he would say offhandedly, “Oh, yeah, I didn’t want to tell you about all that stuff. That’s the old me.”





Although they lack empathy, psychopaths fake normal emotions so convincingly that they often come across as personable, even charming. They learn to compensate for their emotional deficiencies, much the way an amputee manages without the use of a limb.

This appearance of normalcy—the so-called mask of sanity—has bedeviled the study of psychopaths. Though guilty of the most erratic and irresponsible, sometimes destructive and violent behavior, they show none of the classic signs of mental illness. They don't have hallucinations or hear voices. They aren't confused, or anxious, or driven by overwhelming compulsions. Nor do they tend to be socially awkward. They are often of better-than-average intelligence. Add that they do not express true remorse or a desire to change, and it has been easy to view psychopaths not as victims of a dire mental instability but simply as opportunists. To paraphrase the dilemma: Are they mad or simply bad?

From the biblical Cain to the *kun-*

langeta of the Yupi Eskimos and the *arankan* of Nigeria, nearly every culture on earth has recorded the existence of individuals whose antisocial behavior threatens community peace. But thanks to technology that captures brain activity in real time, experts are no longer limited to examining psychopaths' aberrant behavior. We can investigate what is happening inside them as they think, make decisions and react to the world around them. And what we find is that far from being merely selfish, psychopaths suffer from a serious biological defect. Their brains process information differently from those of other people. It's as if they have a learning disability that impairs emotional development.

In a collective throwing up of hands,

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psychiatrists have long written psychopaths off as beyond help. But now that science is unraveling the mechanisms behind the disorder, it's time for that attitude to change. If specific physiological deficits prevent psychopaths from empathizing with others, forming stable relationships and learning from their mistakes, then elucidating them could lead to new treatments: medications, perhaps, or targeted behavioral strategies.

Kiehl has launched an ambitious multimillion-dollar project—funded by the National Institutes of Mental Health (NIMH) and Drug Abuse (NIDA) and the John D. and Catherine T. MacArthur Foundation—to gather genetic information, brain images and case histories from 1,000 psychopaths and compile it all into a searchable database. To speed the work, Kiehl helped to design a portable scanner—a functional MRI machine housed in a trailer—that can be brought inside prison walls, obviating the need for high-level clearances to bring dangerous prisoners off-site.

We believe psychopaths are as deserving of treatment as anyone with a mental illness, but you don't have to feel sympathy to want to help them. Between 15 and 35 percent of U.S. prisoners are psychopaths. Psychopaths offend earli-

FAST FACTS

Out of Tune with Life

- 1>>** Aided by EEGs and brain scans, scientists have discovered that psychopaths possess significant impairments that affect their ability to feel emotions, read other people's cues and learn from their mistakes.
- 2>>** These deficiencies may be apparent in children who are as young as five years old.
- 3>>** When you tally trials, prison stays and inflicted damage, psychopaths cost us \$250 billion to \$400 billion a year.
- 4>>** Psychopaths have traditionally been considered untreatable, but novel forms of therapy show promise.

er, more frequently and more violently than others, and they are four to eight times more likely to commit new crimes on release. In fact, there is a direct correlation between how high people score on the 40-point screening test for psychopathy [see box on page 28] and how likely they are to violate parole. Kiehl recently estimated that the expense of prosecuting and incarcerating psychopaths, combined with the costs of the havoc they wreak in others' lives, totals \$250 billion to \$400 billion a year. No other mental health problem of this size is being so willfully ignored.

Level Heads, Empty Hearts

A man we will call Brad was in prison for a particularly heinous crime. In an interview he described how he had kidnapped a young woman, tied her to a tree, raped her for two days, then slit her throat and left her for dead. He told the story, then concluded with an unforgettable non sequitur. "Do you have a girl?" he asked. "Because I think it's really important to practice the three C's—caring, communication and compassion. That's the secret to a good relationship. I try to practice the three C's in all my relationships." He spoke without hesitation, clearly unaware how bizarre this self-help platitude sounded after his awful confession.

Charming as they may seem, psychopaths can also be tone-deaf because they lack access to their own feelings and those of others. Imagine what it would be like never to be depressed or anxious, never to have regrets or low self-esteem but also never to care deeply for anyone or anything. Psychopaths' emotions are shallow: they feel irritated when they don't get their way and turn to risky behaviors for the flimsiest of reasons. Bereft of loyalties and passions, they wander through life, often straying into criminality on a whim—forgeries, thefts, assaults, even murders may be committed out of some trivial impulse. As for complex emotions such as devotion, guilt



Callousness or laserlike focus? Once something has caught their interest, psychopaths have trouble attending to their surroundings.

or joy, theirs remains a textbook understanding—it has been said that they “know the words but not the music.”

Dozens of studies reveal that psychopaths experience the world differently from other people. They have trouble making appropriate moral value judgments and putting the brakes on their impulses. They are also hampered in how they respond to emotions, language and distractions—a disconnect that is sometimes seen as early as age five.

Psychopaths are curiously oblivious to emotional cues. In 2002 James Blair of the NIMH showed that they are not good at detecting emotions, especially fear, in another person's voice. They also have trouble identifying fearful facial expressions. And a classic experiment in 1991 co-authored by psychologist Robert D.

Hare of the University of British Columbia, a pioneer in the field (and a mentor to Kiehl during graduate school), found that psychopaths miss the emotional nuances of language. The investigators flashed real and nonsense words in front of prisoners, some of whom were psychopaths, and asked them to press a button when they saw a dictionary word. Psychopaths were as quick as nonpsychopaths to differentiate between real and fabricated words. But the experiment went a level deeper, because among the real words some had positive or negative connotations (“milk,” “scar”) whereas others were neutral (“gate”). For the nonpsychopaths, emotionally charged words leaped off the screen; their automatic brain responses, measured by electroencephalograms, showed a distinctive electrical surge, and they pushed the button faster. Psychopaths did not react faster to emotional words, and their brain waves did not change [see box on next page].

Evidence is mounting that language bedevils psychopaths in other ways. Psychopaths have trouble understanding metaphors—for example, they are more likely than others to judge as negative the phrase “Love is an antidote for the world's ills.” Additionally, Kiehl found in a 1999 study that psychopaths make more errors when identifying abstract nouns—words such as “love,” “deceit,” “trust,” “dedication” and “curiosity.”

Yet another deficiency of psychopaths has to do with how they pay attention. In an ingenious gambling experiment, Joseph P. Newman of the University of Wisconsin—Madison, with whom one of us (Buckholtz) has worked extensively, showed that psychopaths have trouble

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shifting gears, even when their current strategy for obtaining their goal is failing. Participants were given a computerized deck of 100 cards that had been arranged so that nine of the first 10 cards were face cards, eight of the next 10 were face cards, seven of the next 10 were face cards, and so forth. They were told that each time they turned over a card they would receive a point if it was a face card and lose a point if it was not. They could end the game at any time. Players earned easy points at first, but as the odds worsened, nonpsychopaths noticed and stopped playing, usually after about 50 cards. Psychopaths, on the other hand, kept on until the deck was almost finished and their winnings had vanished.

Newman believes that the apparent callousness of psychopaths is actually the result of an attentional quirk: they do not take in new information when their attention is otherwise engaged. Previous research has suggested that psychopaths are unreactive: their palms do not sweat when they are exposed to foul odors or shown images of mutilated faces. But Newman and his colleagues recently demonstrated that psychopaths actually have normal physiological responses to unpleasant stimuli, like the threat of an electric shock—except when



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their attention is directed elsewhere. Once fixed on a goal, psychopaths proceed as if they can’t get off the train until it reaches the station. This narrowly focused, full-speed-ahead tendency, paired with the psychopath’s impulsivity, may produce the kind of horror described in *In Cold Blood*: an all-night

torture fest that appears almost aimless, the work of two criminals who, having begun the violence, are blind and deaf to information that might halt it (such as a victim’s pleas), unable to turn away until it has been completed.

An Altered Brain

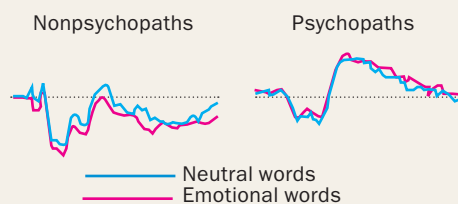
In 1848 a handsome, dark-haired young man named Phineas Gage was working as a construction foreman on the Rutland & Burlington Railroad in Vermont. He and his crew were clearing a rocky area when an accidental explosion blew Gage’s tamping iron—a heavy metal rod more than three feet long—through the left side of his face and out the top of his head. Such an injury seemed sure to kill or at the very least cripple him. But although “half a teacupful” of his brain leaked onto the floor, as the attending doctor recalled, Gage apparently never lost consciousness and on his recovery remained relatively fit. His compatriots noticed a change in him, however—one that was more disturbing than if he had lost the use of his limbs. Formerly savvy, even-tempered and responsible, Gage was now churlish and unpredictable, driven by his immediate passions. Gage’s story became a classic of neuroscience because it revealed that behavior, which seems a matter of personal will, is fundamentally biological.

Gage lost the use of a part of the brain called the ventromedial prefrontal cortex. Located behind the eyes, this area is structurally similar to its neighbor, the orbitofrontal cortex—which many scientists believe malfunctions in psychopaths. The orbitofrontal cortex is involved in sophisticated decision-making tasks that involve sensitivity to risk, reward and punishment. People whose brains are damaged in this area develop problems with impulsivity and insight and lash out in response to perceived affronts—much like Gage. In fact, such patients are often said to suffer from “acquired psychopathy.”

But transformed as Gage was by his accident, he did not show all the charac-

On a Different Wavelength

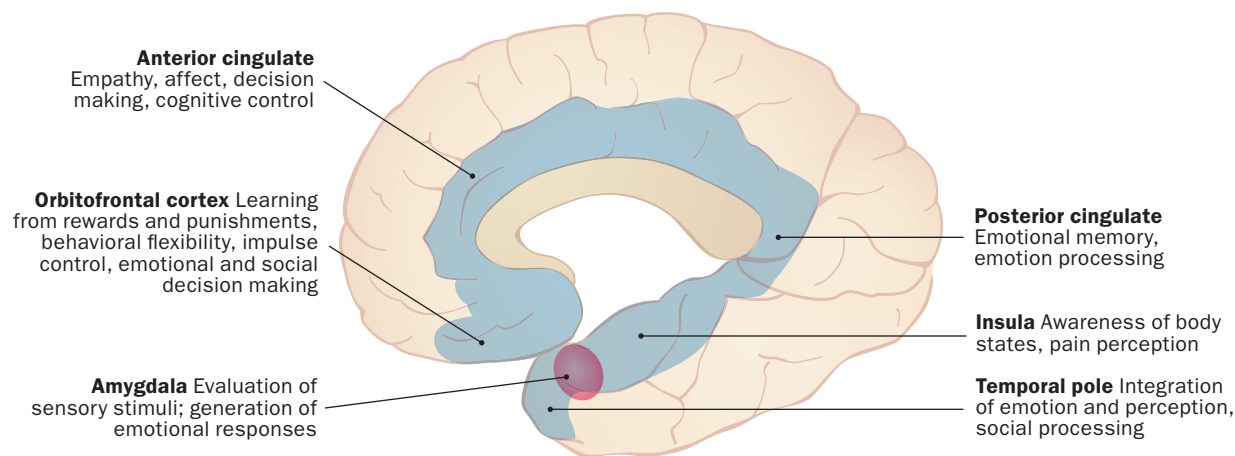
When shown both real and nonsense words and asked to distinguish between the two, most people are quicker to recognize real words that also happen to be emotionally suggestive, such as “blood.” Psychopaths, on the other hand, do not press the button any faster for “blood” than for a neutral word such as “house.” Not only that, their EEG readings tend to be consistent no matter what kind of word they are viewing, whereas other people’s EEGs change distinctively when they spot an emotional word. Moreover, no matter what kind of word they are viewing, psychopaths have unusually shaped brain waves (above). These findings suggest that psychopaths’ brains fire differently from those of other people.



A Brain Gone Wrong

A horseshoe-shaped band of tissue nestled in the deepest recesses of the brain may be the area that malfunctions in psychopaths. Known as the paralimbic system, it includes several interconnected brain regions that register feelings and other sensations and assign emotional value to

experiences. These brain regions also handle decision making, high-level reasoning, and impulse control. People with brain damage in these areas tend to develop psychopathic traits and behaviors. And imaging studies reveal that in psychopaths, the paralimbic areas tend to be underdeveloped.



teristics of psychopathy, such as lack of empathy. This fact suggests that other brain structures are also involved. One likely candidate is the almond-shaped amygdala, which generates emotions such as fear. Monkeys with amygdala damage walk right up to people. Psychopaths, too, are notable for their fearlessness: when confronted with images such as a looming attacker or a weapon aimed their way, they literally don't blink.

But evidence suggests that one or two brain areas are not enough to produce the profound impairments of psychopaths. Kiehl recently proposed that psychopathy emanates from the paralimbic system, a group of interconnected brain structures that are involved in emotion processing, goal seeking, motivation and self-control [see box above]. Supporting this hypothesis are fMRI images of psychopaths' brains made by Kiehl and others, which show a pronounced thinning of the paralimbic tissue—indicating that

this part of the brain is underdeveloped, like a weak muscle.

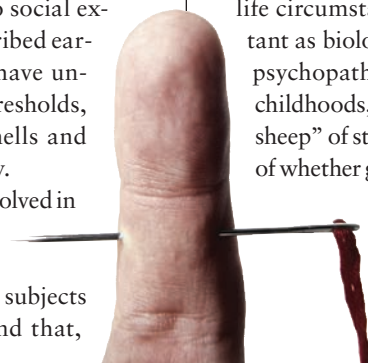
In addition to the orbitofrontal cortex and amygdala, the paralimbic system includes the anterior cingulate cortex and the insula. The anterior cingulate regulates emotional states and helps people control their impulses and monitor their behavior for mistakes.

The insula plays a key role in recognizing violations of social norms, as well as in experiencing anger, fear, empathy and disgust. Psychopathic behavior is by definition insensitive to social expectations, and as described earlier, psychopaths can have unusually high disgust thresholds, tolerating repellent smells and images with equanimity.

The insula is also involved in pain perception. Studies of psychopaths—including one in which subjects got electric shocks—find that,

under certain conditions, they are strikingly unfazed by the threat of pain; they also have trouble noticing their errors and adjusting their behavior accordingly (which helps to explain the self-defeating way that psychopaths land in jail repeatedly, unable to learn from past mistakes).

Are psychopaths made or born? The answer is probably both. If, as investigators believe, genes account for 50 percent of the variability among those who exhibit adult antisocial traits, that means life circumstances are just as important as biological inheritance. Some psychopaths are scarred by rough childhoods, but others are the “black sheep” of stable families. Regardless of whether genes or environment has the greater influence,



Not only are psychopaths blithe about inflicting pain, they often don't fear it.

early intervention—perhaps even in preschool—could be critical. Just as there is a moment in childhood when the brain is primed to learn language, a task that becomes much harder later on, we suspect there may be an early window for devel-

oping the social and cognitive skills that underlie what we call “conscience.”

Ignored at Our Peril

Psychopaths are misunderstood. This fact may not tug at the heartstrings, but

it is a problem for all of us. Some researchers have estimated that as many as 500,000 psychopaths inhabit the U.S. prison system, and there may be another 250,000 more living freely—perhaps not committing serious crimes but still taking advantage of those around them. Helping them manage their impulsivity and aggression could protect many innocents. Until now, though, few efforts have been made in that direction. Billions of research dollars have been spent on depression; probably less than a million has been spent to find treatments for psychopathy. In part, psychologists have been turned off by evidence that psychopaths are untreatable. For example, some studies show that after receiving group therapy in prison, psychopaths are *more* likely to commit new crimes than if they had received no treatment at all. Listening to others bare their soul is clearly not a good strategy: psychopaths are notoriously good at learning and exploiting the weaknesses of others. They also have trouble absorbing abstract ideas, so lectures about personal responsibility are unlikely to penetrate.

But there is room for optimism: a new treatment for intractable juvenile offenders with psychopathic tendencies has had tremendous success. Michael Caldwell, a psychologist at the Mendota Juvenile Treatment Center in Madison, Wis., uses intensive one-on-one therapy known as decompression aimed at ending the vicious cycle in which punishment for bad behavior inspires more bad behavior, which is in turn punished. Over time, the incarcerated youths in Caldwell’s program act out less frequently and become able to participate in standard rehabilitation services.

A group of more than 150 youths treated by Caldwell were 50 percent less likely to engage in violent crime afterward than a comparable group who were treated at regular juvenile corrections facilities. The young people in the regular system killed 16 people in the first four years after their release; those in

Do You Know a Psychopath?

Chances are, you have met a psychopath. People with the disorder make up 0.5 to 1 percent of the general population. When you discount children, women (for reasons that remain a puzzle, few women are afflicted), and those who are already locked up, that translates to approximately 250,000 psychopaths living freely in the U.S.

How can you recognize a psychopath? The test that experts use, known as the Hare Psychopathy Checklist–Revised, consists of 20 criteria, each of which is scored as a 0, 1 or 2. The criteria include behaviors and traits such as pathological lying, proneness to boredom and sexual promiscuity (*below*), which are assessed during an interview as well as by consulting prison and police reports and other official records. The highest possible score is 40 (a score of 2 on all 20 criteria), but anyone who gets 30 or higher is considered a psychopath.

The thing is, everyone falls somewhere on the psychopathy continuum. The average person scores about a 4, but there are plenty who rank in the teens and 20s—not high enough to receive an official diagnosis yet possessing significant (and often noticeable) psychopathic tendencies—the bullying boss, the drifter, the irresponsible guy who is always milking the generosity of friends and lovers.

Antisocial Behavior

- >> Need for stimulation and proneness to boredom
- >> Parasitic lifestyle
- >> Poor behavioral control
- >> Sexual promiscuity
- >> Lack of realistic long-term goals
- >> Impulsivity
- >> Irresponsibility
- >> Early behavior problems
- >> Juvenile delinquency
- >> Parole or probation violations

Emotional/Interpersonal Traits

- >> Glibness and superficial charm
- >> Grandiose sense of self-worth
- >> Pathological lying
- >> Conning and manipulativeness
- >> Lack of remorse or guilt
- >> Shallow affect
- >> Callousness and lack of empathy
- >> Failure to accept responsibility for own actions

Other Factors

- >> Committing a wide variety of crimes
- >> Having many short-term marital relationships



Psychopaths typically get worse, not better, after standard treatments like group therapy. Insights into others' vulnerabilities become opportunities to hone their manipulation skills.

Caldwell's program killed no one. The economic benefits are also huge: for every \$10,000 society spends on treatment, we save \$70,000 that would have been required to keep those people in jail.

The ongoing brain and genetic studies are likely to further improve Caldwell's results: perhaps, as with depression, a combination of therapy and medication will prove especially potent. But such advances are slowed by the fact that psychopathy is often overlooked by the mental health mainstream. It isn't even included in the *Diagnostic and Statistical Manual of Mental Disorders*—the *DSM*—an exhaustive catalogue of more than 300 known psychiatric conditions that serves as the clinician's bible. The *DSM*'s framers instead created a catchall diagnosis for the criminally inclined, known as antisocial personality disorder, and left it at that.

Why was psychopathy excluded? The creators of the *DSM* may have felt that it would be too difficult for the average therapist to make an accurate diagnosis:

after all, psychopaths are sure to lie convincingly during the interview.

Whatever the reasons, many psychiatrists are left with the false impression that psychopathy and antisocial personality disorder are the same. They are not. Antisocial personality disorder is a helpful diagnosis when the question is whether a person is likely to behave badly, but it does nothing to discriminate among criminals. Only one in five people with antisocial personality disorder is a psy-

For every \$10,000 spent on decompression therapy, a promising treatment for youths with psychopathic tendencies, we save \$70,000 that would have been required to keep them in jail.

chopath. Yet time and again at trial, experts wrongfully attest that when a defendant has antisocial personality disorder, it means he is a psychopath, which in turn means he is likely to reoffend and should not be paroled.

As scientists continue to describe the brain dysfunctions of psychopaths, the revelations promise not only to aid disturbed individuals but to bring sanity to society. For it is senseless to ignore psychopaths when they pose such a threat. When lawyers, jailers, psychiatrists and others begin to see psychopaths for what they are—not monsters but people whose emotional disabilities may cause them to act monstrously—we will all be on the path to a safer future. **M**

(Further Reading)

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- ◆ **A Cognitive Neuroscience Perspective on Psychopathy: Evidence for Paralimbic System Dysfunction.** Kent A. Kiehl in *Psychiatry Research*, Vol. 142, Nos. 2–3, pages 107–128; June 15, 2006.
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